



# UNITED STATES PATENT AND TRADEMARK OFFICE

ME

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,302	11/19/2001	Kyoung Hwan Chin	SEC.910	8429

7590 02/25/2004

VOLENTINE FRANCOS, P.L.L.C.  
Suite 150  
12200 Sunrise Valley Drive  
Reston, VA 20191

EXAMINER
----------

WINTER, GENTLE E

ART UNIT	PAPER NUMBER
----------	--------------

1746

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/988,302

Applicant(s)

CHIN ET AL.

Examiner

Gentle E. Winter

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 6-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |                                                                                         |                                                                             |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                                |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____                                                             | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-3 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent No. 6,263,829 to Schneider et al "Schneider". Schneider reads of claim 1 in the following manner. Both the claims and Schneider disclose a chamber ("process chamber 15" see figure 1 and relevant associated text.) formed with a closed space therein; an upper electrode provided in an upper portion of the chamber and applied with radio frequency energy; a lower electrode provided below the upper electrode and applied with radio frequency energy; ("The gas can also be energized by capacitively coupling RF energy to the gas by applying an RF current to process electrodes 90, 95 in the process chamber 15." See fig 1 and relevant associated text.) A chuck provided below the upper electrode and formed thereon with the lower electrode to fix a wafer thereon; ("The substrate 30 is held in place on a chuck 40, such as an electrostatic chuck (as shown) or a mechanical chuck (not shown)") and at least three cleaning gas nozzles provided at regular intervals on a sidewall of the chamber around the chuck. (Figure 9b and relevant associated text).

Art Unit: 1746

2. As to claim 2, disclosing that at least one cleaning gas nozzle is bent toward an upper center of the chamber relative to an upper surface of the chuck, the same is disclosed in figure 9b and relevant associated text.
3. As to claim 3, further limiting claim 2, and disclosing that each cleaning gas nozzle is bent toward an upper center of the chamber relative to an upper surface of the chuck the same is disclosed in figure 9b and relevant associated text.
4. As to claim 5, disclosing that the cleaning gas is NF<sub>3</sub> the nozzles could accommodate NF<sub>3</sub>.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider and United States Patent No. 3,717,439 to Sakai, "Sakai". Each and every limitation of claim 4 is identically disclosed in Schneider, as set forth above, except Schneider fails to explicitly disclose that at least one nozzle is bent in a spiral form toward a center portion of the chamber and in a direction from a lower portion to an upper portion relative to an upper surface of the chuck. It is noted that the specification has been relied on to understand what is contextually meant by the term "spiral". Sakai discloses the missing element (amounts of carrier gas are introduced through the nozzles of the carrier gas pipes 10 into the reaction chamber 6 along its inner wall in the direction indicated by the arrows 18 of FIG. 2, ... while whirling the reaction gas and carrier

Art Unit: 1746

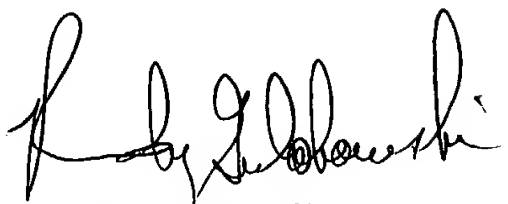
gas together." See figure 2 and *inter alia* column 3, line 28 *et seq.*) Additionally, Sakai provides the explicit motivation for making the claimed combination. Namely, Sakai states at column 2, line 9 *et seq.*, that such a modification provides an apparatus of simple construction capable of producing a semiconductor element while providing uniform thickness, composition and dimensional precision. See column 2, line 10 *et seq.* The artisan would have been motivated to make the claimed combination for the reason explicitly set forth by Sakai, including better mixing and improved product resulting from improved gas distribution.

### ***Conclusion***

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gentle E. Winter whose telephone number is (571) 272-1310. The examiner can normally be reached on Monday-Friday 7:00-3:30.
4. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571) 272-1302. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.
5. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 273-1310.

Gentle E. Winter  
Examiner  
Art Unit 1746

February 20, 2004

  
RANDY GULAKOWSKI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700